

ownership. When he goes on to assert that plants have property, that a plant "possesses a definite territory," he seems to be playing with words. In the organ-pipe coral he finds an example of collective ownership, the individual polype also having something in the way of private property. In animals of a higher class, e.g. in ants, the notion of property does undoubtedly show itself. This paper is illustrated, and some of the pictures are excellent, but a picture of the nest of *Formica rufa* does not help us to understand the subject of property.

The fourth paper (by L. Wodon) is brief, and deals trenchantly with some sociological theories, notably with those of Karl Büchner, who maintains that primitive man was a non-social being. This creature of theory lived in lands where the abundance of natural products made any large output of energy on his part quite unnecessary. Our author satisfactorily disposes of this primitive lotus-eater.

Dr. E. Houzé has contributed a distinctly able paper (fascicule No. 5) on the Aryan and anthroposociology. He has a thorough grasp of his subject, his style is clear, and he has a fine sense of humour. The wonderful theories of the comparative philologist he sends to the limbo to which such theories must sooner or later find their way. He goes rather too far when he maintains that the Aryans were the creatures of the philologists. It is true, no doubt, as he argues, that no race has ever maintained its purity for any length of time unless it happened to be geographically secluded. The pure-bred Aryan stock that we were taught to picture to ourselves ranging over great part of Asia and all of Europe is a myth. But it is difficult to believe that the people who spoke the Aryan tongue in different parts of the world had not a fairly strong strain of kindred blood in them, though they intermarried freely with the tribes and peoples among whom they found themselves. Still, far too much has been made of the Aryans as a separate type, and Dr. Houzé is right to laugh at what has been called "Anglo-Saxon pandolichocephalism," a term invented to describe "the skull which has the honour of sheltering the brain that has guided the world." M. de Lapouge, the champion of the "dolichocephalic blond Aryan," is very severely dealt with. Dr. Houzé is a strong believer in natural selection. He keeps quite clear of the untenable view that it goes on in the organic world generally, whereas among men it has somehow become a thing of the past. "When the sun has baked the grass," he remarks, "it forces innumerable troops of antelopes to migrate: is not this the same cause that drives the Germans to embark at Hamburg for America? It is a question of food." Archaeology, he holds, supplies the firmest foundation for anthropology, and he speaks with great respect of such men as de Morgan, Arthur Evans, and Flinders Petrie. Anthropometry he puts in its proper place. Nothing can be more absurd, as he says, than to make size of skull alone an absolute measure of brain capacity. When he discusses existing populations and their characteristics, Dr. Houzé shows great soundness of judgment. As to the question of town and country life, he holds that the commonly held opinion that towns "devour their inhabitants with rapidity" is at any rate an exaggeration. On the modernism of Teutonic civilisation he makes some very sensible remarks. The Teutons appeared late on the stage of history, and it was only their contact with Gallo-Roman civilisation that enabled them to reduce their legends to writing.

The last of the papers we are reviewing (by R. Petrucci) takes pains to prove that animal associations were developed independently of one another. They do not form a series culminating in human communities. In tracing the descent of birds and of men from simpler forms of life, the author shows a thorough understanding of the subject. About animal societies he has much interesting information—about the sociability of reptiles, about the form the family takes among fish, birds, and mammals. Apparently he does not point out (a curious omission) the interesting fact that the pairing instinct is strong only in those species in which the energy of both parents is required for the feeding or protection of the young. We regret that we have not space to deal more fully with this last paper. Those who are interested in animal associations would do well to study it.

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IS THERE DETERMINATE VARIATION?

IN an article published in *Science* of November 16, Prof.

Vernon L. Kellogg, of Stanford University, discusses the question as to the existence among organisms of determinate variation, that is to say, variation in the same or a similar direction in a large number of individuals of a single species. If such a factor does exist, one of the objections to the origin of species by natural selection—namely, that small individual variations would be eliminated in a generation or two—disappears.

Prof. Kellogg's observations refer to variation occurring in the Californian flower-beetle, *Diabrotica soror*, inhabiting the Stanford University "campus." Large series of this chrysomelid beetle, varying from 500 to 1500 in number, were collected on that area in the years 1895, 1901, 1902, 1904, and 1905. Normally, the beetle shows six dark spots arranged in pairs on each wing-cover. Individuals show, however, a tendency to the transverse coalescence of the two middle or two lower spots on one or both elytra, or a longitudinal fusion of the three spots on each half of the elytron. In 1895 the majority of the beetles had twelve free spots on the two elytra, but among the variations there was a marked tendency to the transverse union of the two middle spots, either on one or both elytra, the percentage being 22.40. In the years 1901-5 a much larger percentage of this variation occurred, reaching 53.92 per cent. in one series in 1905, and 65.40 per cent. in 1904.

After adducing arguments to show that the variation is neither ontogenetic (that is, determined for each generation during development by external influences) nor the result of natural selection, Prof. Kellogg falls back on determinate variation. "If," however, he writes, "determinate variation is the explanation of this change in *Diabrotica soror* it is a determinate variation which is occurring only, apparently, in our particular locality. For in series of specimens of this beetle collected in other parts of California no such change seems to be going on, the old twelve-spots-free form being plainly the modal type. . . . Why the species should be changing on our university campus and not changing in the regions south and north of us is a mystery whose solution I do not even dare to guess at. This solution must have to do with the cause of the variation of the species on our campus. But if one asks what is this cause, what it is that is producing determinate variation in *Diabrotica*, or in any other species, it must be mentioned that prior to any attempt to explain how determinate variation might be produced it is advisable to attempt to determine if determinate variation really exists. Is there determinate variation?"

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

LORD CURZON OF KEDLESTON, who was appointed to be the Romanes lecturer at Oxford for 1906, but was prevented from delivering the lecture, has been appointed the Romanes lecturer for this year.

MR. WILLIAM SMITH, of Geneva, has, says *Science*, given 100,000l. to Hobart College to endow a college for women. It is also announced that Dr. Andrew Carnegie has offered to give 20,000l. to Queen's University, Ontario, on condition that an additional sum of 80,000l. be collected.

MR. J. D. ROCKEFELLER has made a New Year's gift to Chicago University of about 600,000l., which brings his total benefactions to the University up to 3,900,000l. The private gifts to universities and colleges in the United States, announced in these columns during last year, amounted to nearly 5,000,000l.

The annual meeting of the Public School Science Masters' Association will be held at the University of London on Saturday, January 12. The president, the Rev. the Hon. E. Lyttelton, headmaster of Eton, will take the chair, and will read a paper on the place of science and of literature in a general education. Other subjects of papers upon which it is hoped discussion will take place are:—"The Internal Economy of School Science," by Mr. Thwaites, and "The Best Method of Introducing the Atomic Theory in Science," by Mr. F. R. L. Wilson.

IN connection with the University of London, we notice that Mr. A. G. Tansley, assistant professor of botany and lecturer on plant anatomy at University college, will deliver a course of eight lectures on "The Evolution of the Vascular System in the Fern-phyllum," beginning on January 26, at University College. At the physiological laboratory of the University, a course of eight lectures on "The Physiological Effect of Compressed Air" will be given by Mr. Leonard Hill, F.R.S., beginning on January 15. A course of five lectures on the "Structure and Classification of the Myriapoda and Arachnida" will be given at University College by Mr. R. I. Pocock, beginning on January 14.

THE Paris correspondent of the *Times* reports that M. Briand, the French Minister of Education, proposes to suppress the baccalauréat, the degree conferred on a boy on his admission to a French university. Such admission is of necessity preceded by several years' school training, during which the boy is prepared in a somewhat mechanical manner for the examinations on which his admission to the university depends. The system, according to the *Times* correspondent, "is the nearest approach known in Europe to the mandarin method of China." It is very widely felt that at the end of their school careers the boys lack initiative and originality as the result of the undue appeal to their verbal memories, and it is hoped that the abolition of the baccalauréat will discourage the rigid uniformity which characterises French secondary schools, and lead to an endeavour to adapt the curriculum of a school to the particular needs of the pupils attending it.

SEVERAL substantial gifts for the advancement of higher education are recorded in recent issues of *Science*. Among these may be mentioned donations of 20,000*l.* each to Western Reserve University, Cleveland, O., by Mr. H. M. Hanna and Colonel Oliver H. Payne. The 40,000*l.* thus subscribed is to be used in establishing and endowing a laboratory of experimental medicine in the medical school. Mr. William Smith, of Geneva, N.Y., is to found a woman's college. The name of the new college will be the William Smith College for Women, and it will have an endowment of about 70,000*l.* A "Carl Schurz memorial professorship" is to be established at the University of Wisconsin as a result of the movement recently started in Milwaukee by a number of prominent German-Americans. The plan is to raise an endowment of 10,000*l.*, the income of which will be used for the establishment of an annual course of lectures at the State university, to be given by prominent professors of German universities. Mr. Andrew Carnegie has offered to give Washburn College, Topeka, Kans., a second 10,000*l.* for its endowment fund, provided the total endowment reaches 40,000*l.* by January 1, 1908.

THE tenth of the series of articles on "Public School Education" which is being published in the *Times* appeared on December 28, 1906. This contribution deals with laboratories and practical work in the teaching of science, and is by the Rev. T. Nicklin, of Rossall School. Mr. Nicklin says, "it would be hard to find a single public school of recognised position that has not a laboratory which, if not palatial, is yet adequately equipped for that end of science teaching that is regarded in England as educationally best." A little later the article asserts that while the masters in the public schools adhere to the theory that lectures and intellectual teaching must be the staple of the work, the English public schools have from the first made considerable use of the laboratory, and to-day that use is on a larger scale and more thorough in character than ever before. Mr. Nicklin describes the laboratories of an average public school, and indicates briefly the course of study followed. Though it would have been more satisfactory if, in addition to his generous estimate of Prof. Armstrong's work in improving English science teaching, Mr. Nicklin had insisted more upon the paramount importance of laboratory practice in the teaching of science, his article is valuable in showing the very substantial improvement made during recent years in the way in which science is regarded by public-school authorities. Many readers of *NATURE* will remember the days when any sort of practical lesson was unknown in public

schools, and to hear that every such school now has well-equipped laboratories—even if in some cases they are not used enough—is convincing proof that the labours of men of science in the direction of rationalising English public-school education have not been in vain.

SOCIETIES AND ACADEMIES.

LONDON.

Zoological Society, December 11, 1906.—Dr. H. Woodward, F.R.S., vice-president, in the chair.—An account of the ascidians of the Cape Verde marine fauna collected by Mr. Cyril Crossland: Dr. J. Rennie and H. Wiseman. The occurrence of ten species of Ascidiae Simplicies was recorded, of which three were described as new.—Variations in the arterial system of certain species of Anura: L. K. Crawshaw.—Descriptions of fifty-three new species of African Coleoptera of the family Curculionidae: Guy A. K. Marshall.—The cranial and spinal nerves of *Chlamydoselachus anguineus*: Mrs. O. A. Merritt Hawkes. The paper contained a description of these nerves and discussions of them from the point of view of the nerve-component theory, and showed that the nervous as well as the other systems of *Chlamydoselachus* combined specialised and primitive features.—Two mammals obtained by Major Powell-Cotton in the Ituri Forest: R. Lydekker. The author referred a dark-coloured cat's skin to a race of *Felis chrysothrix*, and also described a giant elephant-shrew as new.—The skull of a bruang, or Malay bear, from Tibet, representing a distinct race: R. Lydekker.—South Indian nudibranchs: Sir Charles Elliot. A supplementary account of the radulae of various species based on microscopic slides prepared by Alder and Hancock, discovered in the Hancock Museum at Newcastle-on-Tyne. These slides confirmed many of the identifications suggested in the first paper, and in particular showed that *Doris glenei* was a *Chromodoris*, and that *Doris villosa* was *Thordisa maculigera*, Bgh.

Faraday Society, December 11, 1906.—Dr. T. M. Lowry in the chair.—Contributions to the study of strong electrolytes: Dr. A. C. C. Cumming. (1) *The Elimination of Potential due to Liquid Contact*.—Certain solutions have the property of reducing the potential due to the contact of two solutions, and potassium chloride has been used for this purpose. In most cases a saturated solution of potassium chloride does not remove all the diffusion potential; indeed, if the solutions in the cells be strong, it only removes a small part. This property of removing more or less of the diffusion potential depends on two factors in the connecting solution, first, the positive and negative ions must be of equal velocity, and, secondly, the concentration of the connecting solution must be high compared with the solutions in the cells. The author suggests a saturated ammonium nitrate solution as that which fulfils these two conditions better than anything else at present known, and shows by experiments with different cells that this is the case. (2) *The Potentials of Silver Nitrate Solutions*.—For silver nitrate the electromotive force gives the same measure of the ionic concentrations as is obtained from the conductivities, and therefore supports the view that the conductivity gives a true measure of the ionic concentration.—The electrochemistry of lead: Dr. A. C. C. Cumming. The results in general prove that lead in the tetrad form is a highly electropositive element, and also direct attention to a curious difference in the behaviour of sodium and potassium nitrates towards lead nitrate.—Storage batteries and their electrolytes: R. W. Vicarey. The paper deals chiefly with some of the problems involved in the manufacture of accumulators, particularly as regards the effect of nitrogen and other impurities introduced consciously or by accident in the process of manufacture.

PARIS.

Academy of Sciences, December 24, 1906.—M. H. Poincaré in the chair.—The determination of integrals of equations of the elliptic type by certain conditions at the limits: Émile Picard.—Differential equations of the second order at fixed critical points: Paul Painlevé.—Magnetic work at the town of Tananarivo and district: Ed. El